

START

S101

COBALT IS DISSOLVED IN HYDROCHLORIC ACID SOLUTION. THE CONCENTRATION OF THE HYDRO-CHLORIC ACID IS ADJUSTED IN A RANGE OF $0.1 \text{kmo} 1/\text{m}^3$ TO $3 \text{kmo} 1/\text{m}^3$.

S102

WHILE INJECTING INERT GAS INTO THE AQUEOUS SOLUTION OF COBALT CHLORIDE THE AQUEOUS SOLUTION OF COBALT CHLORIDE IS CONTACTED WITH THE METAL TO CONVERT THE COPPER TO THE MONOVALENT COPPER IONS.

S103

THE AQUEOUS SOLUTION OF COBALT CHLO -RIDE _ IS CONTACTED WITH THE ANION EXCHANGE RESIN TO SEPARATE THE COPPER AS WELL AS ZINC AND THE LIKE FROM THE COBALT.

S104

THE CONCENTRATION OF HYDROCHLORIC ACID OF THE AQUEOUS SOLUTION OF COBALT CHLORIDE IS ADJUSTED TO 7 TO 11kmo1/m³, AND THE COBALT IS AD-SORBED ON THE ANION EXCHANGE RESIN TO SEPARATE THE COBALT FROM THE IMPURITIES SUCH AS TITANIUM.

S105

2. 5 TO 5kmol/m³ OF HYDROCHLORIC ACID SOLUTION IS PASSED THROUGH THE TO ELUTE THE COBALT IN COLUMN ORDER TO SEPARATE THE COBALT FROM THE IMPURITIES SUCH AS MOLYBDENUM.

CONTINUE TO FIG.2

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CONTINUED FROM FIG.1

S106

THE AQUEOUS SOLUTION OF COBALT CHLO -RIDE IS EVAPORATED TO DRYNESS TO OBTAIN COBALT CHLORIDE OR HYDRATES THEREOF.

S107

THE COBALT CHLORIDE OR HYDRATES THEREOF ARE HEATED TO 623K TO LESS THAN 873K IN A HYDROGEN ATMOSPHERE TO OBTAIN COBALT.

S108

THE COBALT IS FUSED WITH PLASMA ARC CONTAINING ACTIVE HYDROGEN TO REMOVE IMPURITIES SUCH AS OXYGEN.

END

FIG.2



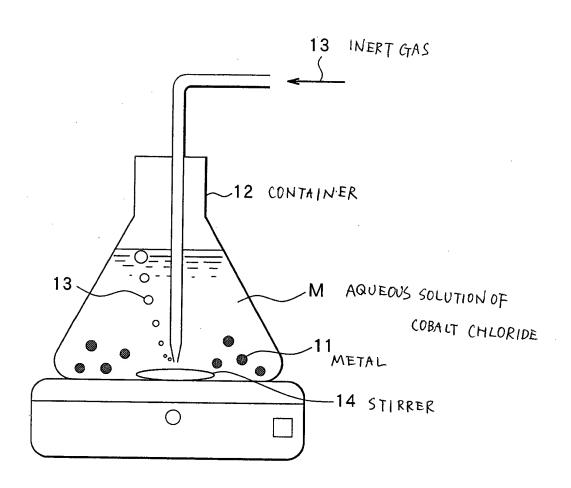


FIG.3



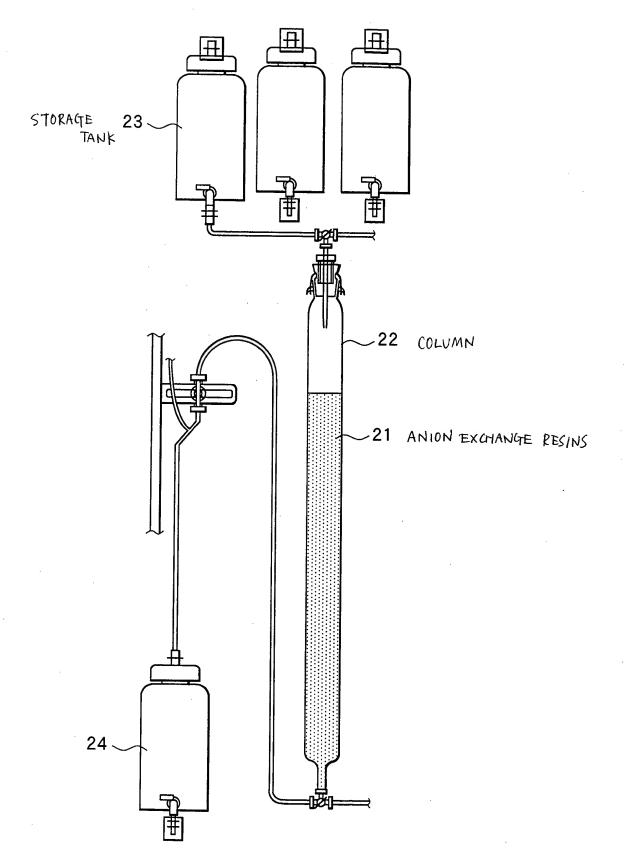
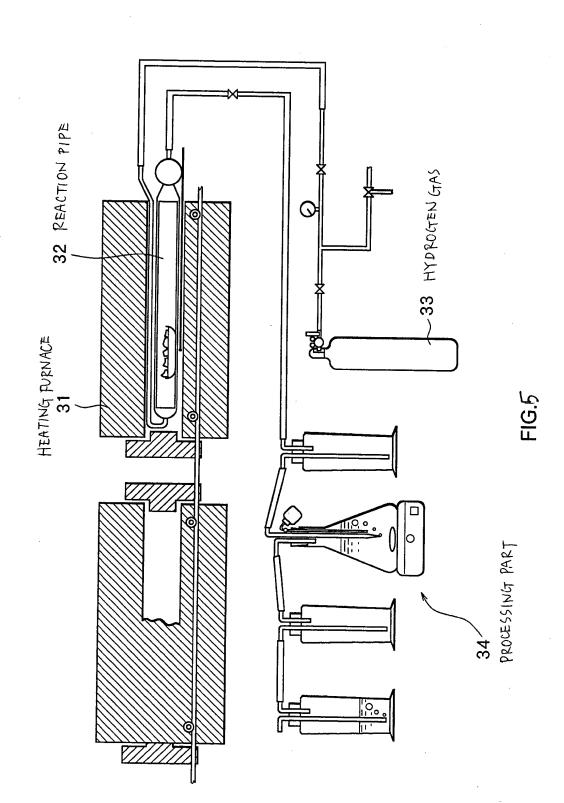


FIG.4





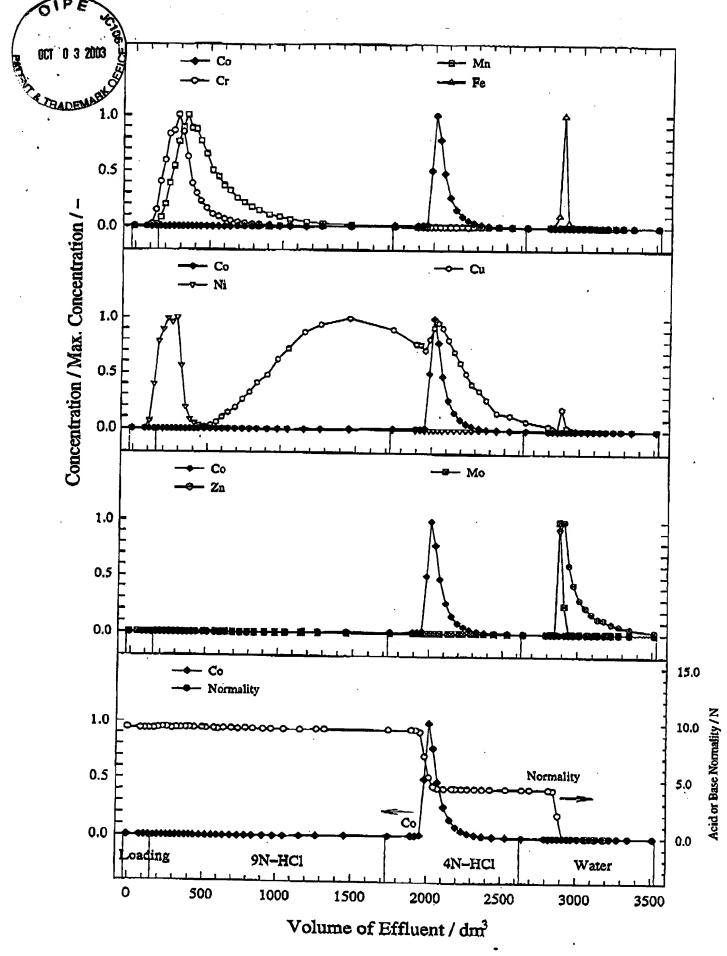
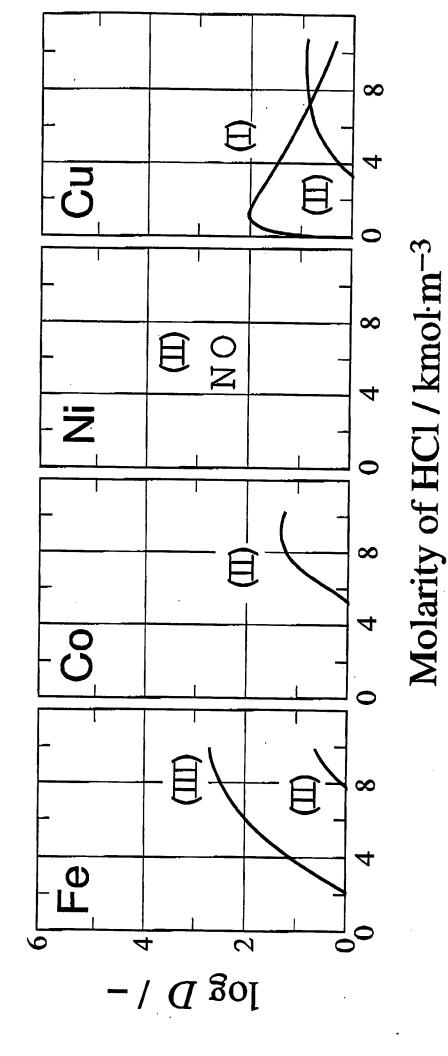


FIG. 6





Absorption of the elements from hydrochloric acid solutions.



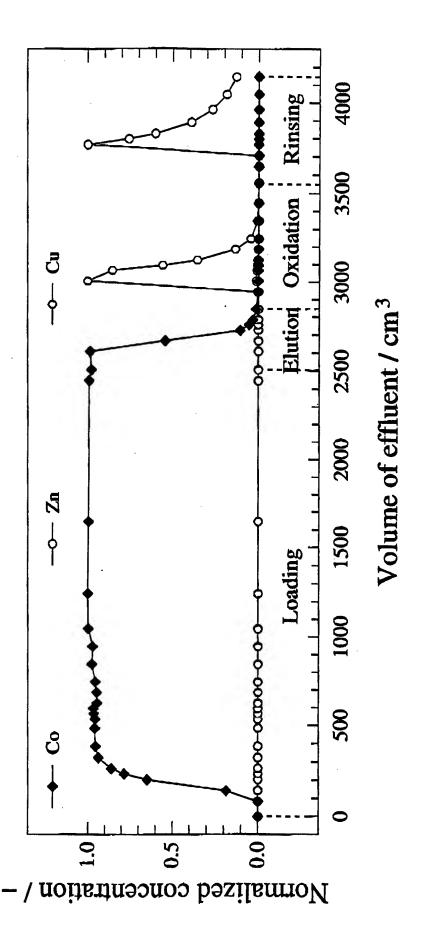


FIG. 8